

Effective Date: Spring 2008-2009

Course Description

Prerequisite: A grade of "C" or better in MATH 1021 or placement by ACT (see placement section of this catalog), or consent of the department. The study of algebraic, trigonometric, and transcendental functions with emphasis on preparation for calculus. Relations, functions, and their graphs; polynomial functions; exponential and logarithmic functions; trigonometric functions; trigonometric identities and equations; laws of sines and cosines; polar coordinates and equations; parametric equations. Credit will not be given for both MATH 1022 and MATH 1023.

Course Objectives

Students will:

1. Understand the fundamentals of precalculus as presented in the topical outline.
2. Develop critical thinking and problem solving skills.
3. Learn how to use the TI 83/84 Plus calculator to solve a variety of problems.*

Procedures to Evaluate these Objectives

1. In-class problems after concept presentation
2. In-class exams
3. Cumulative final exam

Use of Results of Evaluation to Improve the Course

1. Student responses to in-class problems will be used to immediately help clarify any misunderstandings and to later adjust the appropriate course material.
2. All exams will be graded and examined to determine areas of teaching which could use improvement.
3. All evaluation methods will be used to determine the efficacy of the material presentation.

Detailed Topical Outline

1. Functions
2. Polynomial and Rational Functions
3. Exponential and Logarithmic Functions
 - a. Exponential Functions and Their Graphs
 - b. Logarithmic Functions and Their Graphs
 - c. Properties of Logarithms
 - d. Solving Exponential and Logarithmic Equations
 - e. Exponential and Logarithmic Models

4. Systems of Equations and Inequalities
 - a. *Solving Systems of Equations in Two Variables Algebraically and Graphically
 - b. Multivariable Linear Systems
 - c. Partial Fraction Decomposition
 - d. Systems of Inequalities
 - e. Applications of Systems of Equations and Inequalities
 - f. Matrices and Systems of Equations
 - g. The Determinant of a Square Matrix
5. Sequences and Series
 - a. Sequences and Series
 - b. Arithmetic Sequences and Partial Sums
 - c. Geometric Sequences and Series
 - d. The Binomial Theorem
6. Conics and Parametric Equations
 - a. Conics
 - b. Translations of Conics
 - c. Parametric Equations
7. Trigonometric Functions
 - a. Measuring Angles and Arcs
 - b. Trigonometric Functions of Acute Angles
 - c. Trigonometric Functions of Any Angles
 - d. Graphs of Sine and Cosine Functions
 - e. Graphs of Other Trigonometric Functions
 - f. Graphing Techniques
8. Trigonometric Identities and Equations
 - a. Verification of Trigonometric Identities
 - b. Sum, Difference, and Cofunction Identities
 - c. Double- and Half-Angle Identities
 - d. Identities Involving the Sum of Trigonometric Functions
 - e. Inverse Trigonometric Functions
 - f. Trigonometric Equations
9. Applications of Trigonometry
 - a. The Law of Sines
 - b. The Law of Cosines and Area
 - c. Vectors
10. Complex Numbers
 - a. Complex Numbers

- b. Trigonometric Form of Complex Numbers
 - c. De Moivre's Theorem
- 11. Introduction to Polar Coordinates